

W.P. Andrew Lee tried to visit everyone on the planet who was using a hand that once belonged to someone else.

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WHEN BEING FIRST ISN'T ENOUGH

WERE THE FIRST HAND TRANSPLANTS DONE TOO SOON? | BY CHUCK STARESINIC

After a New Zealander lost his hand, a team of surgeons in France took the right hand of a cadaver and attached it to his arm. Bone to bone and skin to skin, they stitched tissue from the dead to that of the living, making a man who was not whole appear whole again. That was in 1998. American and Chinese teams soon matched this feat.

In 2000, seven people received hand transplants; they lived in China, Austria, Italy, France, and Malaysia. Three were double transplants.

Then, the tide shifted. The New Zealander begged to have his hand removed. He did not take his antirejection drugs, said his surgeons. The hand was inflamed, infected, and beyond repair. In all of 2001, only three patients received hand transplants; two had theirs amputated. In 2003, W.P. Andrew Lee tried to visit every person on the planet who was using what was once someone else's hand. He visited 11 out of a possible 14.

"I wanted to test their hands objectively," says Lee, professor of surgery in the University of Pittsburgh School of Medicine and chief of the Division of Plastic Surgery. Many centers reported their own results, he explains, and it was difficult to know how much function was recovered. Often, he says, "I was able to have some casual time with the patients, to ask them how they really felt about their hands."

It's easy to imagine Lee in this role. In his Scaife Hall office, he sits in a straight-backed chair, still and relaxed, hanging one leg easily on the opposite knee. He comes across as calm and perceptive—a surgeon in the guise of a therapist. He is a rarity: a successful surgeon whose primary interest—transplantation of the hand—is an unrealized professional goal. His travels only strengthened his conviction that doctors aren't yet ready to transplant hands. His lab research has shown that a composite tissue transplant, such as a hand, with all its components—skin, fat, muscles, bones, blood vessels, and nerves—provokes the immune system even more than transplanting a lung.

He flips through photographs of hand transplant recipients. One proudly shakes hands with Lee. Another—a policeman who lost both hands when a bomb exploded—gestures animatedly. "He was in a hurry to leave after the interview," says Lee. "He was going on a long-distance motorcycle trip."

Those who received one hand talked of improved body image, of being able to go out socially again. One described attending a karate tournament where he proudly applauded his son, just like the other fathers.

The double recipients told Lee of restored autonomy, of eating and going to the toilet without the help of a spouse or caretaker. A Chinese man said that he could play mahjong and eat with chopsticks. "No small feat," notes Lee, who was born in Taiwan. One man stated simply that without his hands, he could not have had the relationship with his wife that led to the birth of their daughter.

Lee pauses at a photo of a grinning, ruddy-faced man with an arm around his wife. The fingers of the hand cup her shoulder, almost. The thumb sticks up a little stiffly, not fully participating in the embrace. Lee notes that only two patients showed true intrinsic muscle function, which is best demonstrated by touching the thumb to the pinky finger. The man in the picture has become an insulin-dependent diabetic—a side effect of his antirejection medication. One of his hips has been replaced (because of avascular necrosis) and the other may be next.

What if the problem of rejection became a nonissue? What if, say, doctors could make your body believe, at some level, that you are you, but you are also someone else? Someone else whose hand had been given to you?

What sounds like fodder for a philosophy class is the idea behind chimerism, an approach some Pitt investigators are exploring to detour transplant rejection. In his lab, Lee has figured out how to trick an animal into accepting a donor's cells as its own. With living cells from two animals, it becomes a chimera. Lee's team transplants a limb to a chimera, puts the animal on immunosuppression for 30 days, then ends the drug treatment. They've done this successfully with partial rejection of the skin tissue.

Lee lingers over a photo of two transplanted hands.

"This patient did not have very good function," he says. The transplants appear grotesquely thinner in the forearms than the elbows to which they are joined, perhaps because they come from different-size people.

Lee is silent for a moment when asked whether this operation should have been done. He notes that it was experimental, and the doctors readily admitted so. His answer, finally: "No."

Still, Lee expects to offer an amputee a hand transplant one day here in Pittsburgh. He is reticent about when this will happen, but he says, "I will be disappointed if we don't make meaningful progress on tolerance induction in five years. When I can offer this surgery to a patient and be comfortable in telling the patient that I would do the surgery for my family members or myself if we had the same condition—I think that's when I'll offer it to a patient." ■